REMARKS/ARGUMENTS

Claims 17–28 are pending. Claim 17 was amended to make an editorial changes. Claim 18 has been cancelled. New claim 24 has been added. New claims 25–28 were added to more distinctly claim the invention. The new and amended claims are fully supported by the specification. No new matter has been added.

Allowable Claims

Claims 20 and 21 are allowable as the examiner indicated. Claim 18 has been rewritten into independent form as claim 24, and claim 24 should now be in a form for allowance as the examiner indicated.

Rejections Under Section 102

Claims 17 and 22 were rejected under section 102(e) as being anticipated by U.S. patent 6,061,651 (Alanara). Claims 19 and 23 were rejected under section 103(a) as being unpatentable over Alanara. Reconsideration and allowance of the claims are respectfully requested for the following reasons.

Claim 17

Claim 17 recites "establishing a hierarchical data structure for representing an area of interest including the geographical zone, the hierarchical data structure including a first level where the area of interest is represented by cells and a second level where the area of interest is represented by subcells, said subcells of said second level corresponding to smaller geographical areas than said cells of said first level." Alanara does not show or suggest establishing a hierarchical data structure. More specifically, at column 4, lines 63 to column 5, line 9, Alanara discusses a naming of locations and microcells. However, Alanara does not teach or suggest use of any specific data structure.

In computer science, data structures are important for implementing any program requiring data storage and retrieval. Some examples of data structures include lists, stacks,

queues, trees, hash tables, graphs, and files. Some data structures are linear and others are hierarchical. Data of any form may be organized and stored using any of these data structures. Generally, specific data structures are selected to ease or speed-up retrieval of information, or to reduce wasted memory space, or improve memory utilization. For example, one type of data structure is an array. An array data structure may be used to store any type of data, including that described in Alanara. To establish this structure, memory is allocated and each piece of the data may be directly accessed. The data is stored in a flat or nonhierarchical format. Even if the array is not full of data, memory is used, which means this structure may have poor memory utilization is much greater memory than needed is reserved. Therefore, the specific data structure is very important.

Alanara discusses storing data using a memory (reference number 31), but does not describe any specific data structure. Any data structure including lists, stacks, arrays, and queues may be stored in memory. There is no discussion of "establishing a hierarchical data structure," and therefore, Alanara does not provide the benefits and features of the present invention. In the invention, a hierarchical data structure is established and used to store data to facilitate determination of a location of a wireless device within a specified area. By using a hierarchical data structure, information may be updated more easily, processing may sped up, and less RAM memory may be used. For example, less RAM is used when only a relevant node and its subnodes are loaded into memory, rather the complete structure. The remaining nodes of the hierarchical structure reside on a hard disk. Alanara does not provide these features. For at least this reason, claim 17 should be allowable.

Claim 17 further recites "establishing a geographical zone definition for said geographical zone by reference to said hierarchical data structure wherein said geographical zone definition includes information identifying at least one identified cell of said first level and at least one identified subcell of said second level such that said geographical zone is collectively defined by said identified cells and subcells." Alanara does not show or suggest establishing a geographical zone definition by reference to a hierarchical data structure. As discussed above, Alanara does not establish a hierarchical data structure, and therefore cannot establish a geographical zone definition with reference to such a data structure. Alanara does not discuss

having a cell at a first level and a subcell at a second level, relative to the first level, stored in an established hierarchical data structure. For at least this additional reason, claim 17 should be allowable.

Claim 19 is dependent on claim 17 and should be allowable for at least similar reasons. There is no discussion of a hierarchical structure in Alanara and certainly not of a "quadtree" structure of the invention. The "quadtree" structure described in the patent application is novel and nonobvious in the invention recited in claim 19, and for this additional reason, claim 19 should be allowable.

Claim 22

Claim 22 recites "memory for storing a definition of said area of interest in terms of a hierarchical data structure, the hierarchical data structure including first level where the area of interest is represented by cells and a second level where the area of interest is represented by subcells, said subcells of said second level corresponding to smaller geographical areas than the cells of said first level, said definition including information identifying at least one identified cell of said first level and at least one identified subcell of said second level, such that said area of interest is collectively defined by said identified cells and subcells." As explained above, Alanara does not teach or suggest using a hierarchical data structure, and therefore does not provide the benefits of the invention. For at least this reason, claim 22 should be allowable.

Claim 23 is dependent on claim 22 and should be allowable for at least similar reasons. There is no discussion of a hierarchical structure in Alanara and certainly not of a "quadtree" structure of the invention. The "quadtree" structure described in the patent application is novel and nonobvious in the invention recited in claim 23, and for this additional reason, claim 23 should be allowable.

CONCLUSION

In view of the foregoing, applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal notice of allowance at an early date is respectfully requested.

If the examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650–326–2400, extension 5213.

Respectfully submitted,

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